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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/391,059	09/07/1999	VASUDEVAN PARTHASARATHY	RCA88495	8006

7590

03/21/2003

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EXAMINER

YEH, EDITH M

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 03/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/391,059

Applicant(s)

PARTHASARATHY ET AL.

Examiner

Edith M Yeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-19 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 243 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because in FIG 11 the X2p should add to reflect the description in the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:
On page 7 line 36, the “deinterleaver 755” is not shown in the drawing.
Appropriate correction is required.

Claim Objections

3. Claim 16 is objected to because of the following informalities: the term “wherein state machine” does not have antecedence in this claim or its parent claims. It is suggest adding its antecedence before citing it. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7, 10, & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (U.S. Patent 5914988) in view of Ramaswamy et al. (U.S. Patent 5740203).

Regarding claims 1 & 5, Hu et al. disclose a decoder and its method for providing decoded symbol data. A delay delaying received encoded symbol data to produce delayed data (70 FIGURE 1); a re-encoder re-encoding decoded symbol representative data (50 FIGURE 1); a processor (60 FIGURE 1) processing the re-encoded data; and deriving decoded symbol data using the delayed data (column 4 lines 24-34), however do not specify the feed-forward processing to produce difference data. Ramaswamy et al. ('203) teach a processor and its methods (406 FIG.4) to process the re-encoded data (as one input) to produce difference data and deriving decoded symbol data using the delayed data and the difference data (column 9 lines 46-58, column 13 lines 19-26). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to replace Hu et al.'s demapper (960 FIGURE 11) with the demapper taught by Ramaswamy et al. ('203) where the output of the demapper (316 FIG.4 '203) is connected to the post-coder of the '988 and inputs connected to input data from unit 70 and re-encoded data from unit 50 & unit 47 as required to have an efficient and cost effective demapper (column 2 lines 36-45).

Regarding claims 2 & 6, the feed-forward processing is exclusive of feed-back processing where the delayed data (312 FIG.4 '203) used in demapper (406 FIG.4 '203).

Regarding claims 3 & 7, the feed-forward processing prevents error induced by feed-back processing (column 1 lines 17-21, column 13 lines 46-54 '203).

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Regarding claims 4 & 10, Ramaswamy et al. ('203) teach the steps of comparing candidate values between the delayed encoded symbol data and the difference data (column 4 line 66-column 5 line 8, column 13 lines 4-26).

Regarding claim 12, the processor derives decoded symbol data in a partial response system (Abstract. Column 1 lines 5-46, column 2 lines 36-42, FIG.3 '203).

6. Claims 8-9, & 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (U.S. Patent 5914988) in view of Ramaswamy et al. (U.S. Patent 5740203) and Moridi et al. (U.S. Patent 5619540).

Regarding claims 13 & 8, Hu et al. disclose all subject matter claimed except specifying the feed-forward processing to produce difference data and a decision processor for deriving the decoded symbol data.

Ramaswamy et al. ('203) teach a feed-forward processor (406 FIG.4) to process the re-encoded data (as one input) to produce difference data and deriving decoded symbol data using the delayed data and the difference data (column 9 lines 46-58, column 13 lines 19-26). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the demapper taught by Ramaswamy et al. ('203) in Hu et al.'s system to have an efficient and cost effective demapper (column 2 lines 36-45).

Moridi et al. teach a decision processor for deriving the decoded symbol data by computing the absolute distance (Abstract, FIG.5) in mapping constellation points. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the decision processor taught by Moridi et al. in Ramaswamy et al.'s demapper to compute the

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absolute distance using the difference data and the delay data as inputs to have a necessary processor to accomplish the de/mapping and an optimal decoder.

Regarding claims 14 & 9, Ramaswamy et al. teach a comparator for comparing the absolute distance values to determine a minimum symbol difference (column 9 lines 46-58).

Regarding claim 15, Ramaswamy et al. teach a comparator for comparing candidate values between the delayed data and the difference data to determine minimum distance and resolving equality between candidate values (column 13 lines 4-26) in response to a prior delayed and fed back output (977 FIGURE 11 '988).

Regarding claim 16, Ramaswamy et al. teach a different configuration in resolving equality between candidate distances than is used for deriving the difference data (column 13 lines 34-48).

Regarding claim 17, Hu et al. teach the state machine state representative outputs represent the difference data (965 FIGURE 11).

Regarding claim 18, Hu et al. disclose a system for processing trellis encoded data (Abstract, column 3 lines 9-12), trellis decoding apparatus comprising: a delay delaying received encoded symbol data to produce delayed data (70 FIGURE 1); a re-encoder re-encoding decoded symbol representative data (50 FIGURE 1); a processor (60 FIGURE 1) processing the re-encoded data; and deriving decoded symbol data using the delayed data (column 4 lines 24-34), however do not specify the feed-forward processing to produce difference data. Ramaswamy et al. ('203) teach a processor (406 FIG.4) to process the re-encoded data (as one input) to produce difference data and deriving decoded symbol data using the delayed data and the difference data (column 9 lines 46-58, column 13 lines 19-26). At the time of the invention, it would have been

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obvious to a person of ordinary skill in the art to use replace Hu et al.'s demapper (950-960 FIGURE 11) with the demapper taught by Ramaswamy et al. ('203) where the output of the demapper (316 FIG.4 '203) is connected to the post-coder of the '988 to have an efficient and cost effective demapper (column 2 lines 36-45) using past subset outputs in an error propagation-free (column 1 lines 17-21 '03, column 14 lines 43-56 '988), feed-forward configuration.

Regarding claim 19, Hu et al. teach the processor deriving decoded symbol data using past subset outputs (977 FIGURE 11).

Allowable Subject Matter

7. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Yeh whose telephone number is 7033053416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 7033054714. The fax phone numbers for the organization where this application or proceeding is assigned are 7038729314 for regular communications and 7038729314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 7033054800.

Edith Yeh
March 13, 2003



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